

IN THE SPECIFICATION:

Please amend the specification as follows:

Please insert the following new paragraph after the Title section:

STATEMENT OF GOVERNMENT INTEREST:

The work that led to this invention has been supported in part by a grant from the National Institute of Health, Grant Number R03AG15180. Thus, the United States Government may have certain rights to this invention.

IN THE CLAIMS:

Claim 1 (Currently Amended) A method for identifying an object of interest as belonging to a latent class,  
classifying a plurality of objects comprising the steps of:

identifying at least one object of interest;

(a) providing at least one ~~one or more~~ observations related to ~~on~~ the objects;

(b) assigning the at least one observations as a matrix in a multidimensional space, said matrix having at least two directions for each object of ~~the~~ interest in said space;

(c) identifying at least one latent classes of each object ~~according to a formula;~~

$$f(\bar{Y}_{j_1, \dots, j_K}) | \{j_k \in S_{km, j_k}\}_{k=1}^K \sim G\left[h\left(k, j_k, \left\{\{S_{km}\}_{m=1}^{M_k}\right\}_{k=1}^K\right)\right]; \text{ and}$$

(d) calculating the likelihood that ~~each the~~ at least one object of the interest belongs to the at least one identified latent classes.

Claim 2 (Currently Amended) The ~~formula~~ method of claim 1 wherein the step of identifying at least one latent class of each object further comprises, identifying at least one latent class of each object according to a formula:

$$f(\bar{Y}_{j_1, \dots, j_K}) | \{j_k \in S_{km, j_k}\}_{k=1}^K \sim G\left[h\left(k, j_k, \left\{\{S_{km}\}_{m=1}^{M_k}\right\}_{k=1}^K\right)\right]$$

wherein  $k \in \{1, \dots, K\}$  indexes the directions of the multidimensional space;  $j_k \in \{1, \dots, N_k\}$  identifies an object in direction  $k$ ;  $N_k$  is the number of objects in principal direction  $k$ ;  $\bar{Y}_{j_1, \dots, j_K}$  is a vector of one or more observations on a set of objects  $\{j_1, \dots, j_K\}$ ;  $m \in \{1, \dots, M_k\}$  indexes latent classes in direction  $k$